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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/068,592	05/14/1998	KOICHI MORITA	XIP5934USO	2471

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EXAMINER	
DOVE, TRACY MAE	
ART UNIT	**PAPER NUMBER**
1745	30

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/068,592	Applicant(s) Morita
	Examiner Tracy Dove	Art Unit 1745

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Nov 20, 2002* .

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1, 3-5, 7, 9-12, 23, 27, 38, 39, and 41-46* is/are pending in the application.

4a) Of the above, claim(s) *23, 27, and 41-43* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1, 3-5, 7, 9-12, 38, 39, and 44-46* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

This Office Action is in response to the communication filed on 11/20/02. Applicant has elected Group I, claims 1, 3-5, 7, 9-12, 38, 39 and 44-46. Claims 23, 27 and 41-43 are withdrawn from consideration as being directed toward a nonelected invention. Claims 2, 6, 8, 13-22, 24-26, 28-37 and 40 have been canceled.

Election/Restriction

Applicant's election of Group I in Paper No. 29 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/2/02 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-5, 7, 9-12, 38, 39 and 44-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "whose raw material is tar or pitch having 3% or less of primary QI", which is unclear. The specification states "tar or pitch having 3% or less ... of primary QI [is] produced by removing at least part of primary QI which exists in [the] raw material" (page 18, lines 2-5). Thus it appears the raw material, per se, does not have 3% or less of primary QI, but is processed in order to produce the "tar or pitch having 3% or less of primary QI".

Claim 1 recites "whose raw material", which is confusing and unclear. Specifically, it is unclear what carbon material "whose raw material" is referring to. Furthermore, in each of the claims "whose raw material" is recited twice. This claim language is confusing because it is unclear if there are two different raw materials, or if a single raw material has both the primary QI and toluene insoluble matter properties.

Claims 1 and 7 recite "wherein edge parts of a core carbon material are partially or entirely coated" and "wherein the carbon material is nearly spherical or ellipsoidal". It is unclear what constitutes an "edge part" of a "nearly spherical or ellipsoidal" carbon material. Specifically, spheres do not contain edges.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-5, 7, 9-12, 38, 39 and 44-46 are rejected under 35 U.S.C. 102(b)/103(a) as being anticipated by, and alternatively unpatentable over, Miyabayashi et al., US 5,401,598.

Miyabayashi teaches an electrode for a secondary battery including a carbonaceous material. The carbonaceous material has a multiphasic structure comprising a nucleus and a surface layer (coat-forming carbon) around the nucleus (core carbon). See abstract. Figure 1 shows a nearly spherical carbonaceous material. The carbonaceous material has a specific surface area measured by the BET method of 1-100 m2/g, most preferably 2-8 m^2/g. See col. 6, lin 30-35. As to the ratio of the nucleus portion and the surface layer portion, that of the nucleus

is preferably 20-99%e by weight, particularly preferably 50-85% by weight, and that of the surface layer is preferably 1-80% by weight, most preferably 15-40% by weight. See col. 9, lin 45-55. See also col. 10, lin 18-24. Example 4 (col. 17, lin l-5) teaches a ratio of carbonaceous material which was a surface layer was 40 parts by weight based on 100 parts by weight of the carbonaceous material which became a nucleus (40/100+40=0.286). The carbon material forming the nucleus may be graphite. See col. 8, lin 7-13. The carbonaceous material used in Miyabayashi has at least two peaks of diffraction lines corresponding to the multi-phasic structure, that is, as the peak of the diffraction line corresponding to the crystalline structure. The surface layer portion has a spacing d_{002} of a (002) plane of 3.45 A or more and a crystallite size in the c-axis direction (Lc) of less than 150 A. The peak of diffraction line corresponding to the structure of the nucleus portion has a d_{002} of less than 3.45 A and an Lc of 150 A or more. See col. 4, lin 8-31. The carbonaceous material has a true density of 1.80 g/cm or more, and may have any desired shape. The volume average particle size is preferably 200 μm or less, most preferably 2-20 μm. See col. 6, lin 18-29 and abstract. The thermal decomposition (calcination) temperature for forming a surface layer is generally lower than the temperature for synthesizing the carbonaceous material which becomes a nucleus, preferably 300-2000°C. See col. 9, lin 17-20.

The carbonaceous material of Miyabayashi can be formed by heating the material at a temperature of 300-3000°C (decomposing), under an inert gas stream or under vacuum, to carbonize and graphitize the carbon material. Example 1 (col. 14, lin 48-64) teaches thermal

decomposition (calcination) is performed to form the surface layer carbonaceous material on the particle of the carbonaceous material (nucleus). The carbonaceous material is heated up to 900°C at a temperature elevation rate of 10°C/min.

Regarding claim 45, Miyabayashi teaches the granular carbon material has a volume average particle size that is 200 μm or less, most preferably 2 to 20 μm. Since the claimed range of particles having a diameter of 1 μm or less is 10% or less (includes zero), this limitation is disclosed by Miyabayashi.

Regarding claim 46, Miyabayashi teaches the ratio of the nucleus portion and the surface layer portion in col. 9, lines 45-55. The nucleus portion is particularly preferably 50-85% by weight and the surface portion is most preferably 15-40% by weight of the carbonaceous material structure.

Thus the claims are anticipated.

The claims are alternatively unpatentable.

Miyabayashi does not explicitly teach washing the carbonaceous material multiphasic structure.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because irrespective of how the layered carbon materials are made, the products are the same. Thus, whether the layered carbon materials are calcined and then washed, washed before they are calcined, or any other method of manufacturing the layered carbon material is used, the layered carbon materials, as an end result,

are the same. Furthermore, the courts have held that when similar products are produced, the product-by-process limitations are obvious. In re Brown 173 USPQ 685, In re Fessman 180 USPQ 324.

Response to Arguments

Applicant's arguments filed 8/2/02 have been fully considered but they are not persuasive.

Applicant argues the claimed invention offers features and advantages not found in the art. For example, the toluene wash removes fusion-causing material so that it is not necessary to include a pulverizing step to produce the desired size coated carbon material. This argument is not convincing because it does not show that the end products are materially different. Specifically, wether the carbon material is fused and then pulverized or not fused/pulverized, the end products are still the same. The limitations of the claims regarding "raw materials" are considered process limitations. The courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious.

Applicant points out Example 3 and asserts that if the Miyabayashi coated layer were to be washed with a toluene solution, the 100% toluene soluble pitch-coated layer would be removed from the surface of the carbonaceous particles. Examiner disagrees with this analysis. Specifically, if the pitch is 100% dissolved in the toluene, then how does the surface layer of Example 3 form? Only toluene insoluble components of the pitch would be formed on the core carbon particle when it is dipped in the pitch/toluene solution. Note Example 4 that teaches a

carbonaceous material was placed in a solvent in which a pitch was dissolved in a toluene solvent to coat the surface of the carbon particles with the pitch.

Applicant argues that Miyabayashi clearly discloses that its carbon material requires a pulverization process. This is not correct. Note col. 9, lines 10-11 which states the resulting carbon product can be made powder through pulverization process. This indicates an optional step. Furthermore, Examples 2 and 3 do not require a pulverization process, while Example 4 states the particles are pulverized. Thus, Miyabayashi does not require a pulverization process.

Applicant asserts comparative example 5 of the instant specification is representative of Miyabayashi. This cannot be correct. Note Table 2 of the instant invention teaches an efficiency of charge/discharge of 68.1 for comparative example 5. Table 1 of Miyabayashi teaches a charge efficiency of 98-99% for examples 1-4.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

January 15, 2003

Patrick Ryan
Supervisory Patent Examiner
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